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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 22

Application Number: 09/401,521
Filing Date: September 22, 1999
Appellant(s): MEUBUS ET AL.

Matthew Zischka
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07/16/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Each one of the following claim groups I-IV do not stand or fall together.

Group I: Claims 21-23, 25-31, and 33-35

Group II: Claim 24

Group III: Claims 32, 36-37, 39-43, 45-48, 50-51, 53-57, and 59-61

Group IV: Claims 52 and 58.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,805,587	Norris et al.	09/1998
5,572,583	Wheeler, Jr. et al.	11/1996

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 21-31 and 33-35 rejected under 35 U.S.C. 102(e) and claims 32, 36-37, 39-43, 45-48, and 50-61 rejected under 35 U.S.C 103(a). This rejection is set forth in a prior Office Action, mailed on 07/17/03.

Claims 21-31, 33-35 rejected under 35 U.S.C. 102(e) as being anticipated by Norris et al., Patent #5,805,587.

Regarding claim 21, Norris teaches a plurality of telephony switches interconnected in a switched traffic carrying network for carrying telephone call traffic (Fig.1)and an associated signaling network for carrying signaling information relevant to the establishment of call paths on said traffic carrying network (col.1 lines 38-47);

a method of processing an incoming call directed to a specified subscriber telephone line on said traffic carrying network, said specified subscriber telephone line

initially in-use to connect a data terminal to a data network(col.1 lines 38-47), said method comprising:

receiving a signaling message from said signaling network generated in response to said incoming call, said received signaling message received prior to establishment of a call path for said incoming call on said traffic carrying network *(col.1 lines 41-57, col.5 line 66 – col.6 line 11 and col.6 lines 28-50; the ANI of the caller is the signaling message, in which the called party then decides if an establishment of a call path is warranted);*

in response to said received signaling message, dispatching a first data message indicative of said incoming call to said data terminal on said data network by way of said traffic carrying network and said specified subscriber telephone line*(602 Fig.6 and col.6 lines 28-50; the signaling message from the incoming call is sent visually to the data terminal user).*

Regarding claims 22-23 in view of claim 21, Norris teaches:

receiving a second data message from said data terminal, said second data message indicative of a call disposition response provided to incoming call (609 Fig.6).

in response to receiving said second data message, dispatching a signaling message on said signaling network to establish a call path between said incoming call and said specified subscriber telephone line on said traffic carrying network (604 Fig.6 and col.6 lines 60-67 and col.7 lines 13-49).

Regarding claim 24 in view of claim 21, Norris teaches said signaling network comprises an intelligent network, and wherein said received signaling message is

received from a processing element forming part of said signaling network *[CPU 205 Fig. 3; Norris's network is intelligent (e.g. call waiting while subscriber is utilizing the telephone line to connect to the internet)]*, therefore Norris comprises an intelligent network.

Regarding claim 25 in view of claim 22, Norris teaches the received signaling message comprises a telephone dial number identifying said specified subscriber telephone line (col. 2 lines 35-39 and col.6 lines 1-15).

Regarding claim 26 in view of claim 25, Norris teaches said received signaling message comprises at least one of a dial number associated with an originator of said incoming call and a name associated with an originator of said incoming call (col. 2 lines 35-39 and col.5 lines 58-col.6 line 24).

Regarding claim 27 in view of claim 21, Norris teaches said data network comprises an internet protocol compliant network, and wherein said first data message comprises a internet protocol compliant message *(col.6 lines 5-50 and col.8 lines 20-32; Norris' data messages are sent over the internet therefore Norris' data message comprises an internet protocol compliant message).*

Regarding claim 28 in view of claim 26, Norris teaches said first data message comprises at least one of a dial number associated with an originator of said incoming call and a name associated with an originator of said incoming call(602 Fig.6 and col.5 lines 58-col.6 line 24).

Regarding claim 29, Norris teaches a notification server comprising with a first

interface connected to a telephone signaling network adapted to receive signaling messages;

a first interface for connection of said server to a telephony signaling network, said signaling network for carrying signaling information relevant to the establishment of call paths on a switched traffic carrying telephony network, said first interface adapted to receive signaling messages prior to establishment of associated call paths on said traffic carrying telephony network *(235 fig. 3, col.1 lines 41-57, col.5 line 66 – col.6 line 11 and col.6 lines 28-50; the ANI/Caller ID of the caller is the signaling message that is displayed to the called party, in which the called party then decides if an establishment of a call path is warranted- therefore, the signaling information is received prior to establishment of a conversation call path);*

a second interface connecting server to data network (215 fig. 3);

the processor of Norris (*Internet Access server and 205 fig. 3*) is operable to:

receiving a signal indicating an incoming call to a specified telephone line by way of signaling network (col. 2 lines 31-45) and

in response to receiving said signal, dispatching a data message over data network indicative of said incoming call to a terminal in communication with said data network by way of said specified telephone line (603 Fig.6);

Regarding claim 30 in view of claim 29, the processor in Norris can receive a call disposition message from data terminal over data network (col.6 lines 28-67).

Regarding claim 31 in view of claim 30, Norris teaches the notification server, wherein said processor is further operable to dispatch a signaling message to said

signaling network to establish a path on said traffic carrying telephony network between said caller and said specified telephone line, in response to receiving said call disposition response (col.6 lines 5-60).

Regarding claim 33 in view of claim 29, Norris teaches the notification server wherein said data message comprises an internet protocol compliant message*(col.6 line 5-67; the data message is sent across a data network(eg. Internet) therefore the data message comprises an internet protocol compliant message).*

Regarding claim 34 in view of claim 30, Norris teaches the processor is further operable to dispatch a signaling message that establishes a call path between caller and a voice mail server (col.8 lines 6-14)

Regarding claim 35 in view of claim 30, Norris teaches the notification server wherein said processor is further operable to dispatch a signaling message to said signaling network to establish a call path between said caller and a second subscriber telephone line, on said traffic carrying network (280 Fig.3 and col.6 lines 30-36 and col.8 lines 6-12; the second subscriber telephone line in Norris is connected to a voice mail system).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 32, 36-37, 39-43, 45-48, 50-61 rejected under 35 U.S.C. 103(a) as being unpatentable over Norris in view of Wheeler et al., Patent #5,572,583.

Regarding claim 32, Norris teaches a network with signaling comprising: in response to an incoming call directed to a subscriber telephone line in use to connect a data terminal to a data network can operably dispatch a data message to subscriber displaying caller ID information of the caller and in response to subscriber selecting an option on how to handle the call, send a data message back through the data network so the subscriber can choose to terminate the current data connection and establish a call path, route caller to a voice-mail system, ignore the call, or dispose of the call and continue the data communication (602 Fig.6, col.6 lines 1-67).

Norris further teaches a caller interface(S2 Fig.1 connected to a central office switches-label 50 Fig.1 and to a public switched network(PSTN 100 Fig. 1 and 150-10 of Fig.3).

Norris(AT&T assignee) does not expressly teach an Advanced Intelligent Network (AIN) network but does suggest that other public switched networks can be used (e.g AT&T network; col.2 lines 20-25 and col.3 lines 25-38) and uses ISDN-signaling D channel and T1 lines for his connections(col.3 lines 25-38)

Wheeler teaches an AT&T equipped AIN network which is a public switched network and comprises AT&T central office switches(col.5 lines 36-63 and col.11 lines 35-38) , ISDN, and T1 modifications (col.7 lines 18-26 and col.8 lines 19-29).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Norris' ISDN/internet network to include the AIN and

AIN services as taught by Wheeler. One of ordinary skill in the art would have been motivated to do this as Norris suggest the use of other public switched networks(ie. AT&T Fig.1) in his ISDN system and Wheeler teaches implementing ISDN in his AIN with the use of AT&T central office switches (col.5 lines 36-63 and col.11 lines 35-38).

Furthermore, Norris(AT&T assignee) discloses a feature(Remote Access Call Forwarding) offered prior to the year 1995 by Bell Atlantic. Wheeler, who is a Bell Atlantic assignee, discloses the use of an AT&T equipped network and ISDN(used by Norris) in his AIN topology filed in 1994. Therefore, one skilled in the art at the time would have been motivated to implement Wheeler's AIN system within the CO and data network(50,100, and 300 Fig.1) of Norris.

Regarding claims 36, 37, and 39, Norris teaches a signaling network for carrying signaling information relevant to the establishment of call paths on a traffic carrying telephony network, said switching point operable to dispatch a data message in response to an incoming call directed to a specified subscriber telephone line in use to connect a data terminal to a data network using said traffic carrying telephony network, to a telephony network gateway in communication with a data network gateway, said data network gateway operable to dispatch a data message from said over said data network to said data terminal *(300 Fig.1 and col.6 lines 1-67; it is inherently known that utilizing the internet includes having a data network gateway so that the telephony network is able to establish communication with the data network).*

Norris does not expressly teach a Service Control Point (SCP) or a switching point within an AIN for dispatching an AIN termination attempt message.

Wheeler teaches a SCP(43 Fig.1) and a switching point (col.5 lines 36-45) within an AIN for dispatching an AIN termination attempt message (S1 Fig.5, col.9 lines 35-67, and col.13 lines 41-52).

In view of the explanation above in claim 32, it would have been obvious to one of ordinary skill in the art that since AIN capabilities are provided, an incoming call is sent through a AIN network to a SSP from which a termination attempt trigger is then sent to a SCP to provide advanced routing functions before the call is established with the subscriber using the internet from Norris, this is standard routing in an AIN network.

Regarding claim 40, Norris teaches a processing element for interconnection with a communications signaling network carrying signals relevant to establishing call paths on a traffic carrying telephone network, said processing element(200 Fig.1) comprising:
a first interface for connecting said processing element with a signaling network in communication with a switch on said traffic carrying telephone network (235 and 150-10 Fig.3);
a second interface for connecting said processing element with a data network gateway for dispatching data messages on a data network (215 Fig.3);
said processing element operable to dispatch a first message to said data network gateway by way of said second interface in response to receiving an signaling message by way of said first interface, said signal indicative of an incoming call to a specified telephone subscriber line in-use connecting a data terminal to said data network by way of said traffic carrying telephone network (col.6 lines 1-67).

Norris further teaches a caller interface(S2 Fig.1 connected to a central office

switches-label 50 Fig.1 and to a public switched network(PSTN 100 Fig. 1 and 150-10 of Fig.3).

Norris(AT&T assignee) does not expressly teach an Advanced Intelligent Network (AIN) network but does suggest that other public switched networks can be used (e.g AT&T network; col.2 lines 20-25 and col.3 lines 25-38) and uses ISDN-signaling D channel and T1 lines for his connections(col.3 lines 25-38)

Wheeler teaches an AT&T equipped AIN network which is a public switched network and comprises AT&T central office switches(col.5 lines 36-63 and col.11 lines 35-38) , ISDN, and T1 modifications (col.7 lines 18-26 and col.8 lines 19-29).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Norris' ISDN/internet network to include AIN peripherals and services as taught by Wheeler. One of ordinary skill in the art would have been motivated to do this as Norris suggest the use of other public switched networks(ie. AT&T Fig.1) in his ISDN system and Wheeler teaches implementing ISDN in his AIN with the use of AT&T central office switches (col.5 lines 36-63 and col.11 lines 35-38).

Furthermore, Norris(AT&T assignee) discloses a feature(Remote Access Call Forwarding) offered prior to the year 1995 by Bell Atlantic. Wheeler, who is a Bell Atlantic assignee, discloses the use of an AT&T equipped network and ISDN(used by Norris) in his AIN topology filed in 1994. Therefore, one skilled in the art at the time would have been motivated to implement Wheeler's AIN system within the CO and data network(50,100, and 300 Fig.1) of Norris.

Regarding claims 41, 42, and 43 in view of claim 40, Norris teaches dispatching a signaling message on said first interface to establish a call path between said incoming call and:

said specified telephone subscriber line, or second subscriber telephone line, or voice mail system in response to receiving an appropriate call disposition signal from said data network gateway on said second interface *(280 Fig.3 and col.6 lines 28-36 and col.8 lines 6-12; the second subscriber telephone line in Norris is connected to a voice mail system).*

Regarding claim 45, Norris in view of Wheeler teaches the processing element of claim 40, wherein said AIN signaling message comprises an AIN call termination attempt message (Wheeler col.9 lines 35-67 and col.13 lines 41-52; a termination attempt message is a result of a termination attempt trigger).

Regarding claims 46, 47, and 48, Norris in view of Wheeler teaches the processing element of claim 45, wherein said AIN call termination attempt message comprises a telephone dial number identifying said subscriber line *(Wheeler col.6 lines 35-53), or*

an identifier of an originator of said call, including at least one of a name and dial number associated with said call, or at least one of said name and said dial number (Wheeler *col.6 lines 35-53).*

Regarding claims 50-52 and 56-58, Norris teaches a method of dispatching a message indicative of an incoming call, originating with a caller interconnected with said

first switch to a subscriber line interconnected with said second switch, to a terminal in communication with a data network (DT1 Fig.1 and col.6 lines 1-67).

Norris as modified by Wheeler in view of above explanation regarding the implementation of an AIN network with the PSTN of Norris would arrive to the claimed invention below:

in response to a first signaling message(Norris col.6 lines 1-10),

dispatching a second signaling message to a processing element(Norris col.6 lines 11-14; processor 205),

dispatching a third signaling message from said processing element to said data network gateway(Norris' data gateway Fig.1 label 200 and col.6 lines 24-42),

in response to third signaling message, dispatching a data message from said gateway to said data terminal(Norris' Fig.1 label DT1 and col.6 lines 42-50);

the second signaling message is a termination attempt message, which is the eventual *how-to* terminate message presented to the called party(col.6 lines 31-50).

These signaling messages are prior to the establishment of a call path between the first and second switches because it is after these signaling messages that the subscriber connected to internet can have the option of selecting if he/she chooses to establish a 2-way voice conversation call path with the incoming caller.

Regarding claims 53-55 and 59-61 in view of claims 52 and 58 respectively, Norris as modified by Wheeler teaches the second signaling comprising the telephone dial number identifying said subscriber line *(routing incoming call of Norris', col.2 lines 35-39 through 1st SSP and 2nd SSP to the SCP of Wheeler Fig.1 and col.6 lines 35-52*

and col.9 lines 35-66, would still include the telephone dial number identifying said subscriber line as the SCP needs this information to know how to process the incoming call).

Allowable Subject Matter

Claim 49 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach the AIN system of claim 40 which further incorporates a processing element able to monitor a voice mail server and provide a signal to a data network gateway indicative of a message waiting at said voice mail server.

(11) Response to Argument

Regarding claim 21 (Group I of claims 21-23, 25-31, and 33-35), Applicant argues that Norris fails to disclose receiving a signaling message from a signaling network generated in response to an incoming call, said received signaling message received prior to establishment of a call path for said incoming call.

Examiner respectfully disagrees. The examiner interprets a 'call path' as a 2-way voice call path, which is different than a signaling path. Thus the signaling messages in Norris is sent prior to establishment of a call path(col.6 lines 1-15 *"TS 105 signals IAS 200..., in which signaling is transmitted over the associated D signaling channel....the signaling information transported over the D signaling channel includes, inter alia, forward-to-number and calling party telephone number").* Then IAS 200 composes a

signaling message to send to the PSTN 100 to signal the called subscriber(DT1) of the incoming call (col.6 lines 30-50).

It is after the signaling messages are dispatched from Norris' IAS 200 to the PSTN then to the called subscriber, that the subscriber can choose to "connect the call" for establishing a 2-way voice call path(Norris col.6 lines 30-35).

Applicant cites column references(col.1 lines 41-57) on page 8 of brief that is merely the general summary and not the specific disclosure of Norris that teaches the limitation argued above, see Norris col.6 lines 1-15 which Examiner relies upon.

It is further noted that the cited passage above "*signaling in response to an incoming call*" is consistent with applicant's specification(eg. page 1 lines 26-37 and page 7 lines 24-36).

Regarding claim 24 (Group II), Applicant argues that the prior art of record, Norris, fails to disclose an intelligent network.

Examiner respectfully disagrees as Norris' network is "intelligent" as a standard non-ISDN circuit-switched network could not have performed the features taught in Norris because the signaling information(col.6 lines 1-42) sent prior to establishment of a call path needs a signaling network(D channel). For note, ISDN comprises of 2 'B' bearer channels and 1 'D' signaling channel.

Norris' network also uses data packet transmitting(col.3 lines 4-15 and col.6 lines 29-42) which is more advanced and intelligent over a standard non-ISDN circuit-switched network.

Examiner would like to further note that according to Newton's Telecom Dictionary

definition of "Intelligent Network"(attached hereto), "*the most familiar Intelligent Network is the Public Switched Telephone Network(PSTN)*" which Norris uses a PSTN(see Fig.1 label 100).

Therefore Norris' signaling network is an "Intelligent Network" (PSTN) and therefore reads on the claimed invention as recited.

It is noted that applicant uses Claim Differentiation in claim 24, it is clear that applicant understands "intelligent network" can be read broader than "advanced intelligent network" as recited in Group III(eg. claim 32).

Regarding Group III (claims 32, 36-37, 39-43, 45-48, 50-51, 53-57, and 59-61),

Applicant argues that a prima facie case of obviousness has yet been established by the combined references(Norris in view of Wheeler et al.), more specifically:

(a) Lack of suggestion or motivation to combine is not found in the prior art, reference to applicant's arguments of claim 32, whereby the references does not teach a "...signaling network comprises an advanced intelligent network(AIN)"

Examiner respectfully disagrees as Norris' network is first and foremost advanced and intelligent to implement the advanced features taught in Norris(see explanation for Group II above) and therefore reads on claim 32. It was obvious to one of ordinary skill in the art combine the advanced intelligent peripherals in Wheeler with the advanced and intelligent network of Norris at the time the invention was made because the Advanced Intelligent Network as taught by Wheeler was well-known and implemented in a variety of networks used at the time (Wheeler col.5 lines 36-54) more specifically with the PSTN. Wheeler further suggests using the central office switching system(CO) as

SSP's, part of the "Advanced Intelligent Network", therefore using Norris' CO's in Fig.1 label 25/50 as SSP's was suggested at the time the invention was made. Furthermore, Wheeler suggests in *col.6 lines 17-34 and in Fig.1* that the SS7 network and 'other signaling networks' can be used as his SSP and SCP type networks(AIN). Norris teaches a signaling network and ISDN(which includes SS7- see attached Newton's Telecom Dictionary copyright 1997 explanation of ISDN), therefore further suggestion that Norris's ISDN network was obvious to combine with a well-known and widely used AIN network as taught by Wheeler at the time the invention was made. In summary, AIN was designed to be integrated with current ISDN implementations(e.g. see Wheeler col.8 lines 16-29).

Applicant makes conclusory arguments that the combined references fail to teach or suggest all claim limitations regarding claims 32, 36, 37, 39-43, 45-48, and 50-61. Thus specific arguments were not presented against these claims and therefore examiner maintains the same explanation of rejection in the above prior Office Action, mailed 07/13/03.

It is clear that the basic concept of applicant's invention(interacting with a called party currently connected to a data network) is taught by Norris and Wheeler's well-known AIN topology was obvious to combine with Norris' advanced and intelligent ISDN network at the time the invention was made(e.g. see Wheeler col.8 lines 16-29).

Regarding group IV, claims 52 and 58, applicant argues that the combined references fails to teach "dispatching the second signaling message prior to establishing a call path to the second switch for the incoming call" and fails to establish a *prima facie*

case of obviousness.

Examiner respectfully disagrees as the combined references teaches that in response to a first signaling message(Norris col.6 lines 1-10), dispatching a second signaling message from the IAS to the PSTN switch 105 prior to establishing a call path to provide the called party termination options(Norris col.6 lines 11-35). It is again noted that these signaling messages are dispatched prior to establishing a 2-way voice call path. It is after the signaling messages are dispatched, when the subscriber connected to the data network can select an option on how to handle the incoming call(Norris col.6 lines 30-35).

The *prima facie* case of obviousness was established, see Examiner's explanation of Group III above. Therefore claims 52 and 58 is obvious over Norris in view of Wheeler.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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ISDN - Integrated Services Digital Network

and designed for the desktop, and, in North America PRI, which is 1,544,000 bits per second and in Europe PRI, which is 2,048,000 bits per second. PRI, which can be made into as many as 24 and 32 phone calls (respectively). PRI is designed for telephone switches, computer telephony and voice processing systems. ISDN BRI is a wonderful service in your home or office because it can give you videoconferencing, and ultrafaster data communications. But it is not an easy service to get up and running. The best advice I can give you is: 1. Figure out what you want to do with your ISDN. 2. Find which equipment you're going to need that will do the best job for you. 3. Call the manufacturer of that equipment, tell him where you're located and ask him which ISDN service to order. 4. After he tells you, order your ISDN service from your local phone company. 5. Then buy the equipment. 6. Allow yourself at least a month to get up and running. 7. Any ISDN equipment you install in a PC will cause major interrupt problems. Make sure you know which interrupts your PC is using for what. See IRQs.

ISDN is essentially a totally new concept of what the world's telephone system should be. According to AT&T, today's public switched phone network has the following limitations: 1. Each voice line is only 4 KHz, which is very narrow, which limits also the speed you can send data across. 2. Most signaling is in-band signaling, which is very consuming of bandwidth (i.e. it's expensive and inefficient). 3. The little out-of-band signaling that exists today runs on lines separate to the network. This includes signaling for PBX attendants, hotel/motel, Centrex and PBX calling information. 4. Most users have separate voice and data networks, which is inefficient, expensive and limiting. 5. Premises telephone and data equipment must be separately administered from the network it runs on. 6. There is a wide and growing variety of voice, data and digital interface standards, many of which are incompatible.

ISDN's "vision" is to overcome these deficiencies in four ways: 1. By providing an internationally accepted standard for voice, data and signaling. That standard has pretty well achieved, though don't try and take North American ISDN equipment to Europe. 2. By making all transmission circuits end-to-end digital. 3. By adopting a standard out-of-band signaling system. 4. By bringing significantly more bandwidth to the desktop.

One of the best features of ISDN is the speed of dialing. Instead of 20 seconds for a call to go through on today's old analog network, with ISDN it takes less than a second. It's beautiful. Here are some sample ISDN services:

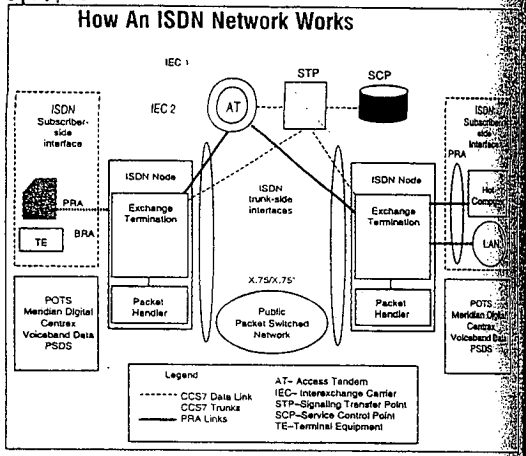
Call waiting: A line is busy. A call comes in. The user knows who is calling. He can then accept, reject, ignore, transfer the call.

Citywide Centrex: A myriad of services: Specialized numbering and dialing plans. Central management of all ISDN terminals, including PBXs, key systems, etc.

Credit card calling: Automatic billing of certain or all calls into accounts independent of the calling line/s.

Calling line identification presentation: Provides the calling party the ISDN "phone" number, possibly with additional address information, of the called party. Such information may flash across the screen of an ISDN phone or be announced by a synthesized voice. The called party can then accept, reject or transfer the call. If the called party is not there, then his/her phone will automatically record the incoming call's phone number and allow automatic callbacks when he/she returns or calls back in from elsewhere.

Calling line identification restriction: Restricts presentation of the calling party's ISDN "phone" number, possibly with additional address information, to the called party.



Closed user group: Restricts conversations to or among a select group of phone numbers, local, long distance or international.

Collaborative Computing. Work on the same document or drawing or design with someone 10,000 miles away. With ISDN, it doesn't really matter where members of the design team live.

Desktop videoconferencing. I have an ISDN desktop videoconferencing device on my desk. It's wonderful to see the person at the other end. It makes for a far more meaningful conversation.

E-Mail (a.k.a. Personal mailbox): ISDN can carry information to and from unattended phones as long as they're equipped with proper hardware and software.

Internet Access: It's much nicer to browse the Internet at 128 Kbps than at 28.8 Kbps which is the fastest I can do it today with the fastest analog modem I can buy.

Shared Screen — Switched data services provided via ISDN lets two people in remote locations, both equipped with a computer terminal, view the same information on their screens and discuss its contents while making changes — all over one telephone line.

Simultaneous Data Calls: Two users can talk and exchange information over the D packet and/or the B circuit or packet switched channel.

There are two major problems to the widespread acceptance of ISDN: First, the cost of ISDN terminal equipment is too high. Second, the cost of upgrading central office hardware and software to ISDN is too high. Both costs are coming down. In early, 1995 Pacific Bell announced that it would install one million lines of ISDN BRI by the end of 1998. And, to make this happen, it dropped its ISDN monthly prices to an affordable $24.95 a month for residences and $26.50 a month for businesses.

There are three basic configurations you can get ISDN:

1. The 2B+D "S" interface (also called the "T" interface). The 2B+D is called the Basic Rate Interface (BRI). The "S" interface uses four unshielded normal telephone wires (two twisted wire pairs) to deliver two "Bearer" 64,000 bits per second channels and one "data" signaling channel of 16,000 bits per second. An S-interfaced phone can be located up to one kilometer from the central office switch driving it. Each of the two 64 kpbs "bearer" or B channels can be used to carry a voice conversation, or one high speed data or several data channels, which are multiplexed into zone 64 kbps high speed data line. The "D" channel of 16 kbps will carry control and signaling information to set up and break down the voice and data calls. The "D" channel can also carry data up to 9600 bits per second in addition to the control and signaling information. Signaling and control on the D channel conforms to a protocol (LAPD) and a messaging structure (Q.931). These two allow intelligent endpoints and switching nodes from different vendors to talk a common language and thus be able to transfer features across a network, from one switch to another, e.g. to transfer a Centrex call across town through several switches and to have it arrive at the end phone with the calling party's name.

2. The 2B+D "U" interface. This "U" interface delivers the same two 64 kbps bearer channels and one 16 kbps data channel, except that it uses 2-wires (one pair) and can work at 5-10 kilometers from the central office switch driving it. The "U" interface is the most common ISDN interface. It carries 160,000 bits per second from the central office to your home or office. Of those 160,000 bits, two are used for 64,000 bps Bearer (B) channels and one is used by the subscriber for 16,000 bps of data (the D channel). The other 16,000 bps is used by the network for signaling between the black box on the subscriber premises and the central office. The idea is to get the ISDN "U" interface working to 18,000 feet — the average length of a North American subscriber local loop. You connect the two "U" wires (local loop pair) coming in from your local ISDN CO into a black box about the size of desk printing calculator, called an NT-1. Out the side of the black box comes four wires, which are called the "S Bus." Onto these four wires you can attach, in a loop configuration (also called single bus), as many as eight ISDN terminals — telephones, fax machines, etc. See ISDN.

3. The 23B+D or 30B+D. This is called the Primary Rate Interface (PRI). At 23B+D, it is 1.544 megabits per second. At 30B+D, it is 2.048 megabits per second. The first, 23B+D is the standard T-1 line in the U.S. which operates on two pairs. The second 30B+D is the standard E-1 line in Europe, which also operates on two pairs or wires (i.e. four conductors).

Integral to ISDN's ability to produce new customer services is ITU Signaling System 7. This is a ITU-T recommendation which does two basic things: First, it removes all phone signaling from the present network onto a separate packet switched data network, thus providing enormous economies of bandwidth. Second, it broadens the information that is generated by a call, or call attempt. This information — like the phone number of the person who's calling — will significantly broaden the number of useful new services the ISDN telephone network of tomorrow will be able to deliver.

ISDN has "enjoyed" many "meanings," including I Still Don't Know to It Still Does Nothing its most recent, I Smell Dollars Now. For more on ISDN, see EURO-ISDN, INTEL BLUE, ISDN STANDARDS, ISDN TELEPHONE, ISUP, ISDN NETWORK TERMINATION 1, PERSONAL COMPUTER TERMINAL ADAPTER, PROSHARE, Q.931, ROBBED BIT SIGNALING, SIGNALING SYSTEM 7, SPID and TCAP.

ISDN 2 What the Americans call ISDN BRI, the British call ISDN 2, which is ISDN with two BRI channels and one D channel.

ISDN 30 The name of an ISDN service which delivers 30 ISDN BRI lines over a single line. ISDN 30 is a fancy name for ISDN on an E-1 line. You find it in countries outside North America, especially Europe. ISDN 2, in the UK, is their name for what Americans call ISDN BRI. See ISDN.

ISDN Basic Link Facility Here is a Nynex definition: The ISDN Basic Link Facility consists of a local transmission facility terminated in the local central office and in a suitable

network interface device that is capable of su
standard ISDN Basic Rate 2 Binary 1 Quaternary
line coding scheme. The standard ISDN-Basic Lir
18,000 cable feet or less from the central office te
served via appropriate electronic equipment, to
Termination One device located on the customer's
ISDN BRI Service 2B+D - Two bearer channel
channel to your desktop. There are many varieties
service. The three most common are National IS
pliant, AT&T 5ESS Custom (an older form of ISI
Northern Telecom DMS 100 ISDN. With ISDI
choose your ISDN equipment first, figure out wh
check whether what it needs is available from you
phone company, then get your line installed, the
equipment. Changing your line specs later is ex
slow. ISDN is still a very first generation prod
when you get it working, it usually works thereaft
flawlessly. See ISDN.
ISDN Forum See Vendors ISDN Associatio
ISDN Modem A special kind of ISDN Term
ISDN Terminal Adapter) with enhanced functiona
hardware, etc.) to allow it to connect and exchan
conventional analog modems. Ordinary ISD
adapters can only support data communications
ISDN devices. They lack the ability to communica
ventional modems. Because of this, the many on-l
and other analog modem-based applications are r
to users of normal ISDN terminal adapters. The ext
ality in ISDN modems allow their users to make
and other existing analog modem-based services.
ition supplied by Paul D. Cook or Ameritech, whc
a White Paper describing the obvious need for su
ISDN Network Termination Device You
your ISDN phone directly into an ISDN line like y
today's analog lines. You need a black box, calle
Termination device, called an NT1, as in Network
1. In North America you can pick one of these de
under $250. The NT1 provides an interface betwe
loop and an S or T interface terminal, such as an I
or the PCTA (Personal Computer Terminal Ad
PCTA is the device which turns a PC into an I
nal/phone. The NT1 is the classic ISDN "bla
the subscriber's premises at the end of the
coming in from the phone company. It talks to the
tral office. And, in turn, all ISDN terminals, phone
devices on the subscriber premises are plugge
black box. The basic NT1 functions are:

- Line transmission termination.
- Layer 1 line maintenance functions and perform
itoring.
- Layer 1 multiplexing, and
- Interface termination, including multi drop
employing layer 1 contention resolution.

Some ISDN devices — such as LAN hubs — nov
NT1s built in. See ISDN.
ISDN Overflow/Diversion A feature o
Galaxy ACDs. ISDN Overflow/Diversion allows G
users to overflow calls between multiple switches
D-channels and B-channels through the public ne
gives the user a virtual private network without
dedicated trunks. By using ISDN messages to ove
specific information associated with the call can b
the destination switch, such as ANI, DNIS, and d
queue at the originating switch

Integrated Voice Data Workstation See ISDN, IVDT and Integrated Voice/Data.

Integration Software If your business is like Technology Investor Magazine, it has different software programs for each business task — accounting, sales automation, order entry, inventory, etc. If you could get those pieces of software to talk to each other, and to talk sense to each other, you could save time, lower labor costs, improve your products and provide better customer service. Better yet, if you could get your internal software programs talking to software at your suppliers and customers, you could save even more money, labor and time. That's what integration software does. Every business of any size can use it to improve how their business works.

Integration Testing Integration (or single thread) testing is the phase in the computer telephony lifecycle that begins as individual modules are pulled together to make a complete system. Testing in this phase is related to making sure the interfaces between the various modules function correctly, and is oriented to functional issues. Inter-module functions are be checked for load stability by exposing them to a variety of real-world stimuli. Definition courtesy Steve Gladstone, from his book "Testing Computer Telephony Systems."

Integrity The decision you make when nobody is watching. Definition courtesy Alocholics Anonymous.

Intel Military for intelligence. Also the world's largest semiconductor manufacturer.

Intel Blue Specifications required to provision the ISDN line to meet the needs of Intel's ISDN-based products. When ordering your ISDN phone line and you want to use it for data or video, tell them it's "Intel Blue." That should tell your local phone company the correct technical specifications for your line. And when you come to plug in your ISDN equipment (assuming your chosen manufacturer has made it compatible with Intel Blue), it should work. This is not a guarantee, but a probability. See ISDN.

Intellectual Property Intellectual property is produced by effort of the mind, as distinct from real or personal property. Intellectual property may or may not enjoy the benefit of legal protection. In the November 4, 2002 issue of Information Week, Tony Kontzer wrote that intellectual property generally takes one of four forms: inventions, ideas, trade secrets, and goodwill. Each has its own method of protection.

- A patent issued by the U.S. Patent and Trademark Office grants an inventor exclusive right to an invention for 20 years from the date of application. According to the U.S. Patent and Trademark Office's Web site, a patent can be obtained by anyone who "invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." In addition to being new and useful, an invention also must meet one other condition before a patent can be issued: It must not be obvious.
- A copyright registered with the Copyright Office of the Library of Congress gives authors the exclusive right to reproduce, adapt, distribute copies of, perform, or display literary, dramatic, musical, artistic, and certain other intellectual works. While the bulk of copyrights are issued for works in the arts, they're also granted to business ideas, such as source code and mission statements.
- Trade secrets fall under state law and are defined as confidential information that provides indisputable economic value. A business owner can turn to trade-secret laws if such information is improperly disclosed — by a former employee, for instance — or is otherwise illegally acquired by a competitor.
- A trademark registered with the Patent and Trademark Office grants ownership of a word, name, symbol, or device that indicates the source of traded goods and distinguishes those goods from the goods of others. The owner of a trademark can prevent others from using a confusingly similar mark, protecting the goodwill that a brand carries with it. But the trademark can't be used to prevent them from selling the same goods under a clearly different mark.

See Copyright, Patent, Trademark, Trade Secret, and WIPO.

Intelligence The part of a computer which performs the arithmetic and logic functions. Also, the information impressed or modulated on a transmission carrier — either voice or data.

Intelligent Agent Software that has been taught something of your desires or preferences and acts on your behalf to do things for you. It might, for example, search through incoming material on networks (e-mail and news) and find what you're interested in or looking for. It might, for example, monitor your TV viewing habits, accept general instructions about your preferences and then, on its own, browse through huge databases of available videos and make recommendations about programs you might be interested in viewing.

Intelligent Answering A Rolm term, explained thus: "When your customers call — or you call them — the Rolm 9751 CBX system can use automatic number identification (ANI) or dialed number identification service (DNIS) to identify the caller and the reason for that call."

Intelligent Assistance A concept Apple is pushing for its Newton PDA. Newton can anticipate what you want to do and provide a bit of help. This is how Fortune Magazine explained it: For example, scrawl "lunch with John Thursday." My Newton would assume that Thursday means next Thursday and that John is the John I've been meeting with a lot lately, John Sculley, and that I want to eat at 12:30, my usual lunch hour. Newton updates my calendar, and presto, displays the entry for my approval. I can okay it or change it.

Intelligent Battery System See IBS.

Intelligent Business Process Routing If your business is like Technology Investor Magazine, it has different software programs for each business task — accounting, sales automation, order entry, inventory, etc. If you could get those pieces of software to talk to each other, and to talk sense to each other, you could save time, lower labor costs, improve your products and provide better customer service. Better yet, if you could get your internal software programs talking to software at your suppliers and customers, you could save even more money, labor and time. That's what integration software does. Every business of any size can use it to improve how their business works: There are three types of integration software: enterprise application, business-to-business; and business-to-community. What's the difference? All integration software lets two or more software applications — e.g. accounting and inventory — exchange (transport) and understand (transformation) each other's data. That's why it's often called plumbing software. Enterprise application integration (EAI) software links a company's "inside" applications — the software only its employees use. It's what used to be called middleware, but with better management and more features. Plus, it connects all applications — a universal translator of sorts. Middleware usually connects just two specific applications. EAI also does intelligent business process routing — telling each piece of software where to send its data to complete all the necessary business processes. Think of what customer relationship management software should do after a salesperson enters an order: notify accounting to register the income, advise accounts receivable to issue a bill, tell inventory to see if the product is in stock, let shipping know to print a packing slip, and tell logistics to schedule delivery, etc.

Intelligent Call Management ICM. A generic name for a system that distributes phone calls across geographically distributed call centers. The ICM system provides pre-routing, post-routing, and performance monitoring.

Intelligent Concentrator A concentrator which receives signals from a device on one port and retransmits them to devices on other ports. An intelligent concentrator is one that has software and therefore has programming capabilities.

Intelligent Hub A hub that performs bridging and routing functions in a collapsed backbone environment. In short, it functions both as a bridge and multiprotocol router.

Intelligent Multiple Access Spectrum Sharing See IMASS.

Intelligent Multiple Access Spectrum Sharing IMASS. A method of automatically determining the presence of existing private operational fixed microwave (OFM) systems in the areas near base stations, and avoiding the use of frequencies for the PCS or cellular base station which might cause unacceptable interference. Instead the PCS or cellular systems will use frequencies in each area, which are not being used by nearly OFM systems. Techniques such as this will be helpful to PCS service providers coexisting with the incumbent OFM systems, until they can be relocated to difference frequencies according to the FCC rules.

Intelligent Network IN. A network that allows functionality to be distributed flexibly at a variety of nodes on and off the network and allows the architecture to be modified to control the services. The most familiar intelligent network is the Public Switched Telephone Network (PSTN). In North America, the Intelligent Network is an advanced network concept that is envisioned to offer such things as (a) distributed call-processing capabilities across multiple network modules, (b) real-time authorization code verification, (c) one-number services, and (d) flexible private network services (including (1) reconfiguration by subscriber, (2) traffic analyses, (3) service restrictions, (4) routing control, and (5) data on call histories). Levels of IN development are:

- IN/1. A protocol intelligent network targeted toward services that allow increased customer control and that can be provided by centralized switching vehicles serving a large customer base.
- IN1+. A protocol intelligent network targeted toward services that can be provided by centralized switching vehicles, e.g., access tandems, serving a large customer base.
- IN/2. A proposed, advanced intelligent-network concept that extends the distributed IN/1 architecture to accommodate the concept called the "service independence." Traditionally, service logic has been localized at individual switching systems. The IN/2 architecture provides flexibility in the placement of service logic, requiring the use of advanced techniques to manage the distribution of both network data and service logic across multiple IN/2 modules. See AIN, which stands for Advanced Intelligent Network.

See also Dumb Network.

Intelligent Peripheral IP. A network system in the Advanced Intelligent Network Release 1 architecture containing an Resource containing an Resource Control Execution Environment (RCEE) functional group that enables flexible information interactions between a user and the network.

Intelligent Phone When the Bell operating companies get bored they occasionally fantasize about applications for the networks they provide. Here are some of their ideas for what intelligent phones could, if motivated, do:

Select entertainment on demand (movies, music, video); Order groceries or other services or products; Record customized news and sports programming; Enroll and participate in education programs from the convenience of subscribers' living rooms; Find up-to-minute medical, legal and encyclopedic information; Pay bills and manage finances; Make airline, rental car and hotel reservations and buy sports and entertainment tickets.

Intelligent Premises Equipment This refers to modern equipment, such as routers and intelligent switches. These devices are often capable of taking on roles traditionally performed by the network service, such as error correction.

Intelligent Routing A voice call comes in. Your voice mail machine recognizes it as being urgent, so it gives the caller a message, "Please hold. Harry is away from his desk. I'll find Harry for you." Meantime, it dials several numbers looking for me. It also beeps me. Eventually I call in. It tells me, "John Smith is calling for you. You want him?" Yes, I say and we're connected. This is a simple form of a broad concept that many are beginning to call intelligent routing. See also At Work and Windows Telephony.

Intelligent Terminal A terminal is an input/output device to a distant computer. The terminal may communicate with the computer over a dedicated collection of wires or over phone lines. In the early days, terminals contained no processing power. They simply reflected what the user typed in and what the distant computer responded. As computers became cheaper and with the advent of the "computer on a chip," so it was economically possible to put computing power into a terminal. This reduced the load on the main computer and cut down on communications costs. There are levels of "intelligence" in terminals. An intelligent terminal might perform simple arithmetic functions or it might check the accuracy of input data (does the zip code match the state?). It may perform far more comprehensive processing — as doing virtually all the local processing, and only transmitting summary results to corporate headquarters once a day. A personal computer can be used and act as an Intelligent Terminal. Many personal computer communications software can emulate terminals, the most common being the DEC VT-100.

Intelligent Token A hardware device which generates one-time passwords. In turn, the passwords are verified by a secure server, yielding additional security.

Intelligible Crosstalk Crosstalk from which information can be derived.

INTELSAT INternational TELecommunications SATellite organization. At its formation, Intelsat was a worldwide consortium of national satellite communications organizations. Intelsat was originally is owned by 138 governments and Intelsat itself owned 24 satellites worldwide. At one stage, INTELSAT owned and operated the world's most extensive global communications satellite system. In June 2001, Intelsat, Ltd. was formed as a result of the privatization of the former intergovernmental organization INTELSAT is now privately owned by an international group of over 200 shareholders; major owners include Lockheed Martin Corporation (beneficial owner), Videsh Sanchar Nigam Limited, France Telecom, Telenor Broadband Services A.S., and British Telecommunications plc. The U.S. Open-Market Reorganization for the Betterment of International Telecommunications Act ("ORBIT") required that Intelsat conduct an initial public offering ("IPO") of its equity securities no later than December 31, 2002.

Intensity Modulation IM. In optical communication, a form of modulation in which the optical power output of a source is varied in accordance with some characteristic of the modulating signal. In intensity modulation, there are no discrete upper and lower sidebands in the usually understood sense of these terms, because present optical sources